

## The effect of various dominant *VRN* alleles and their combinations on the duration of development phases and productivity in common wheat lines

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Establishing the effect of different alleles of the *VRN* loci and their combinations on the duration of the developmental phases and the productivity of common wheat is of immediate practical importance for breeding. Since most varieties of Russia and Western Siberia carry the dominant alleles of *Vrn-A1* and *Vrn-B1* genes, were obtained two lines of winter cultivar Bezostaya 1 (Bez1) with the combination of alleles of the *VRN-I* locus: Bez1 *Vrn-A1a Vrn-B1a* and Bez1 *Vrn-A1a Vrn-B1c*. Homozygous plants were isolated in the F<sub>2</sub> generation using allele-specific primers for the *VRN-A1* and *VRN-B1* loci. Based on the genetic segregation of F<sub>2</sub> hybrids with tester isogenic lines, it was confirmed that the obtained lines carry two dominant genes: *Vrn-A1* and *Vrn-B1*. The presence of the *Ppd-D1a* allele in lines of cultivar Bez1 was shown with the use of PCR-marker. It was established that the lines with two dominant alleles headed on day 40, which was 2, 8 and 5 days shorter than in the isogenic lines i:Bez1 *Vrn-A1a*, i:Bez1 *Vrn-B1a* and i:Bez1 *Vrn-B1c*, respectively ( $p \leq 0.01-0.001$ ). Also, these lines have reduced the period of “tillering-first node” compared to the above lines by 2, 9, and 8 days, respectively ( $p < 0.001$ ). The study of the dynamics of the growth cone in the lines of the Bez1 and Sava cultivars showed that the differences began to appear from the “tillering-first node” stage. The lines with the dominant allele *Vrn-A1a* were ahead of other lines at the III–IV stages of organogenesis in the degree of differentiation and the size of the growth cone and the lines with the *Vrn-B1c* allele were ahead the lines with the *Vrn-B1a* allele. It was found that the lines with dominant allele *Vrn-B1c* were the most productive, and the Bez1 *Vrn-A1a Vrn-B1c* line was more productive than the Bez1 *Vrn-A1a Vrn-B1a*.

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